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<p>(54) Title: SELF-EXTINGUISHING CIGARETTE</p> <div data-bbox="365 1276 1318 1554" data-label="Image"> </div> <p>(57) Abstract</p> <p>A self-extinguishing cigarette comprising a tubular outer wrapper surrounding a tobacco rod or column is provided with a non-collapsible elongated ampoule, which will break, soften, fuse or burn when exposed to heat, containing a non-flammable liquid medium in a sufficient amount to extinguish the glow in the cigarette when liberated from the ampoule and arranged coaxially at the mouth end and within the body of the cigarette.</p>		

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Self-extinguishing cigarette

5 The invention relates to a self-extinguishing cigarette.

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It is well-known that a discarded smouldering cigarette can be unpleasant and dangerous because the cigarette may continue to smoulder and burn after the smoking has been discontinued.

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The unpleasant aspects consist primarily in bad smell and odour produced during the slow burning of the discarded cigarette. The dangerous aspects consist in different types of serious fire hazards. Smouldering cigarettes in ashtrays have caused numerous fires which have resulted in complete destruction of buildings, ships, etc., e.g. when ashtrays with still smouldering cigarettes have been emptied in containers containing inflammable materials; and smouldering cigarettes discarded on the ground have caused numerous large and devastating fires in forests and fields.

These inconveniences and hazards could be eliminated or at least minimized if it was possible to provide a reliable self-extinguishing cigarette, which in the present context is defined as a cigarette having the ability of extinguishing itself at the moment when the glow arrives at a predetermined position on its way towards the mouth end of the cigarette. A further advantage of a self-extinguishing cigarette consists in the possibility of arranging the extinguishing position at such a point that it is impossible to smoke the last part of the cigarette, which is acknowledged as being the most dangerous, seen from a medical point of view.

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In GB patent specification no. 245,329 it has been pro-

posed to provide a self-extinguishing cigarette comprising an encircling band or bands located intermediate its ends and treated chemically or by constriction, or both, for the purpose of extinguishing the slow burning or smouldering of the cigarette when the smoking thereof is discontinued, whilst permitting the proper burning of the cigarette when smoked in the usual way.

However, this solution cannot be considered satisfactory, partly because of unreliability, partly because the chemically treated bands will cause formation of unacceptable gases with bad or strange taste when exposed to the glow during or after smoking.

Cigarette filters containing a single or a plurality of collapsible capsule(s) or ampoule(s) filled with water or other liquids are known, e.g. from US patent specification no. 3,428,049 and DK patent specification no. 125,566. The water or liquid contained in these capsules or ampoules is released by applying a squeezing pressure to the outer wrapper of the filter, thereby breaking the collapsible capsule or ampoule. According to this part of the known art, the purpose of releasing the water or the liquid in the filter is to improve the effect of the filter and if desired to augment or supplement the flavour of the smoke.

The safe functioning of such filters is however endangered by untimely breaking of the collapsible capsules or ampoules, e.g. during the production of the filter; when the filters are arranged in the cigarettes; and during packaging and transport of the cigarettes from factory to user.

The object of the present invention is to provide a reliable self-extinguishing cigarette, as defined above,

which does not exhibit any of the above mentioned drawbacks.

- 5 This is achieved according to the present invention
by a self-extinguishing cigarette comprising a tubular
outer wrapper surrounding a tobacco rod or column, which
is characterized by comprising a non-collapsible elongated
ampoule, which will break, soften, fuse or burn when
10 exposed to heat, containing a non-inflammable liquid
medium in a sufficient amount to extinguish the glow
in the cigarette when liberated from the ampoule and
arranged coaxially at the mouth end and within the body
of the cigarette.
- 15 During smoking of the cigarette according to the present
invention the glow will move down towards the ampoule,
which will break, either directly by the action of the
heat of the glow or indirectly by a pressure increase
in the liquid medium, thus causing release of the liquid
20 medium, preferably water or an aqueous solution, contained
in the ampoule. The released water or liquid will then
rapidly extinguish the glow, i.e. the cigarette, without
any conscious action from the smoker being needed.
- 25 Since the non-collapsible construction of the ampoule
ensures that it will not break when the cigarette is
subjected to a normal squeezing pressure, i.e. a pressure
less than what would destroy the cigarette in any case,
there is no risk of untimely release of the water or
30 liquid contained in the ampoule.

The ampoule is preferentially formed from a material,
which will fuse or soften by the action of heat from
the glow, and which does not produce noxious gases or
35 any smell or taste when exposed to heat. Polyethylene
and polypropylene are examples of such preferred materials.

Preferably the ampoule has a length of about 10-25 mm, an external diameter of about 1.5 - 4 mm and an internal diameter of about 0.5 - 3.5 mm. Such ampoules can easily be manufactured by spot sealing a corresponding tube
5 filled with water or liquid.

If desired, the water or the liquid may be kept at a moderate pressure within the ampoule.

10 The water or the liquid contained in the ampoule may contain additives, such as surfactants or other useful components, e.g. components augmenting or supplementing the flavour of the smoke, such as menthol or lemon oil.

15 Regardless of the composition and nature of the liquid in the ampoule, it should be present in a sufficient amount to extinguish the glow in the cigarette. In case of water less than 0.03 ml will generally suffice.

20 According to a preferred embodiment of the invention the ampoule is formed with a first end wall facing the glow and an opposite second end wall facing the mouth end of the cigarette, said first end wall being thinner than said second end wall.

25 The cigarette according to the present invention may also be provided with a filter element facing the tobacco rod or column. In this case the ampoule may be embedded partly in the filter element, partly in the tobacco
30 rod, or it may be entirely embedded in the tobacco rod.

In the drawings

fig. 1 is a longitudinal cross-sectional view of one
35 embodiment of the cigarette according to the invention, without filter tip;

fig. 2 is a longitudinal cross-sectional view of another embodiment of the cigarette according to the invention, with filter tip; and

- 5 fig. 3 is a longitudinal cross-sectional view of a filter element containing an ampoule.

As shown in fig. 1 a cigarette 1 without filter comprises an outer wrapper 2 surrounding a tobacco rod or column
10 3 containing an ampoule 4 containing water 5 arranged at the mouth end of the cigarette.

The filter cigarette 1 shown in fig. 2 comprises an outer wrapper 2 surrounding a tobacco rod or column
15 3 facing a filter rod 6. In this case the ampoule 4 is embedded partly in the filter rod 6, partly in the tobacco rod 3.

If it is desired to provide a filter cigarette, which
20 will extinguish when the glow is further away from the filter, the ampoule may be embedded totally in the tobacco rod.

Fig. 3 shows a filter element 7 which may be used in
25 the manufacture of the cigarette shown in fig. 2. This filter element 7 comprises a filter rod 6 and an ampoule 4 partially embedded therein. The illustrated ampoule 4 is formed with a thin end wall 8 facing the glow and an opposite end wall 9 having normal thickness and facing
30 the mouth end of the filter.

P A T E N T C L A I M S

1. A self-extinguishing cigarette comprising a tubular
outer wrapper surrounding a tobacco rod or column,
5 c h a r a c t e r i z e d by comprising a non-collapsible
elongated ampoule, which will break, soften, fuse or
burn when exposed to heat, containing a non-inflammable
liquid medium in a sufficient amount to extinguish the
glow in the cigarette when liberated from the ampoule
10 and arranged coaxially at the mouth end and within the
body of the cigarette.

2. A self-extinguishing cigarette according to claim
1,
15 c h a r a c t e r i z e d in that the liquid medium
is water or an aqueous solution.

3. A self-extinguishing cigarette according to claims
1 - 2,
20 c h a r a c t e r i z e d in that the ampoule is shaped
with a first end wall facing the glow and an opposite
second end wall facing the mouth end of the cigarette,
said first end wall being thinner than said second end
wall.

25 4. A self-extinguishing cigarette according to claims
1 - 3,
c h a r a c t e r i z e d in that the ampoule has a
length of about 10 - 25 mm, an external diameter of
30 about 1.5 - 4 mm, and an internal diameter of about
0.5 - 3.5 mm.

5. A self-extinguishing cigarette according to claims
1 - 4,
35 c h a r a c t e r i z e d in that the ampoule is formed
of a plastic material which will soften, fuse or burn

when exposed to heat without liberating noxious or smelling gases.

6. A self-extinguishing cigarette according to claim 5,
5 c h a r a c t e r i z e d in that said plastic material
is polyethylene or polypropylene.

7. A self-extinguishing cigarette according to claims
1 - 6,
10 c h a r a c t e r i z e d in that said cigarette is
provided with a filter element facing the tobacco rod
or column and that the ampoule is embedded partly in
the filter element, partly in the tobacco rod.

15 8. A self-extinguishing cigarette according to claims
1 - 6,
c h a r a c t e r i z e d in that said cigarette is
provided with a filter element facing the tobacco rod
or column and that the ampoule is entirely embedded
20 in the tobacco rod.

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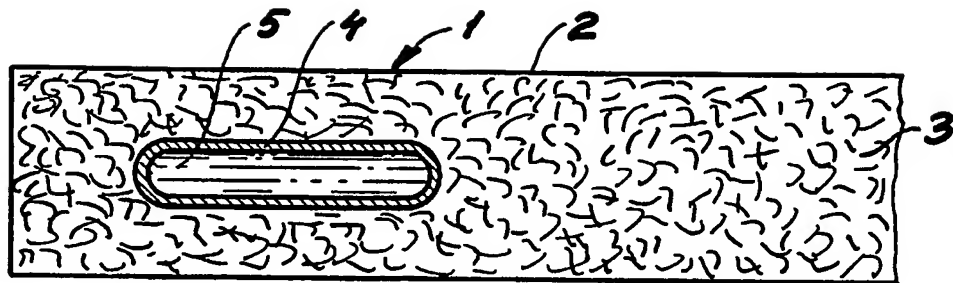


Fig.1

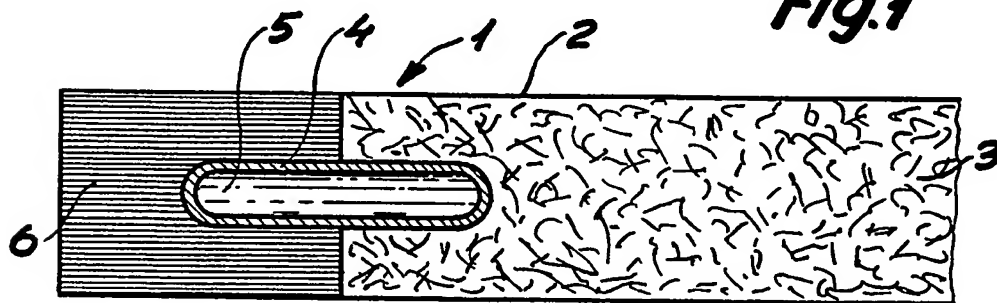


Fig.2

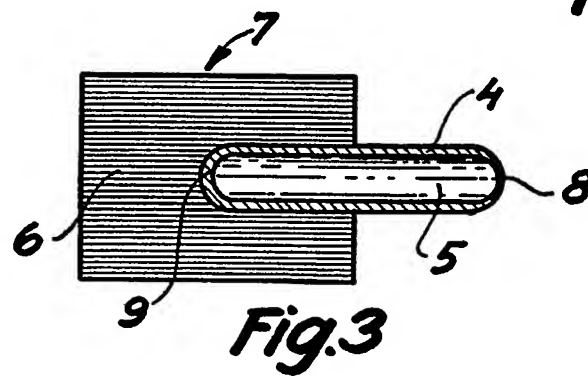
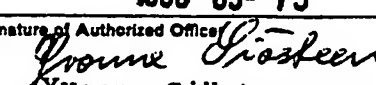


Fig.3

INTERNATIONAL SEARCH REPORT

International Application No

PCT/DK86/00013

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) *		
According to International Patent Classification (IPC) or to both National Classification and IPC 4		
A 24 D 1/10		
II. FIELDS SEARCHED		
Minimum Documentation Searched 7		
Classification System	Classification Symbols	
IPC 2	A 24 C 5/50	
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US C1	131:4, 349, 360-363	
Documentation Searched other than Minimum Documentation to the extent that such Documents are Included in the Fields Searched *		
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III. DOCUMENTS CONSIDERED TO BE RELEVANT *		
Category *	Citation of Document, 11 with indication, where appropriate, of the relevant passages 12	Relevant to Claim No. 13
X, Y	US, A, 3 985 143 (JAMES B LAPPIN JR) 12 October 1976	1-8
X	US, A, 1 726 737 (E M HARRIS) 30 December 1927	1-8
Y	US, A, 4 436 101 (WILLIAM SEATTS) 13 March 1984	1-8
Y	US, A, 4 226 249 (MARION A NEWMAN) 7 October 1980	1-8
Y	DK, B, 125 566 (THE H-2-0 FILTER CORPO- RATION, NEW YORK, USA) 12 March 1973	1-8
Y	DK, B, 115 903 (THE H-2-0 FILTER CORPO- RATION, NEW YORK, USA) 17 November 1969	1-8
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